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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,733	01/22/2002	Andreas Jurisch	112740-353	6159
29177	7590	01/27/2004		
BELL, BOYD & LLOYD, LLC P. O. BOX 1135 CHICAGO, IL 60690-1135				
			EXAMINER TSAI, CAROL S W	
			ART UNIT 2857	PAPER NUMBER
DATE MAILED: 01/27/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/031,733	JURISCH ET AL.	
	Examiner	Art Unit	
	Carol S Tsai	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6,7 and 10 is/are rejected.
- 7) ☒ Claim(s) 8 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,723,216 to Premierlani in view of U. S. Patent No. 5,165,051 to Kumar.

Premierlani discloses a method for determining an amplitude and phase angle of a measuring signal corresponding to a current or a voltage on an electrical power supply network by using sampled values of the measuring signal, the method comprising the steps of: using a model of the measuring signal containing a sinusoidal component in accordance with the relationship $y = A \cdot \sin(2\pi ft + \varphi)$, with y designating an instantaneous value of the model of the measuring signal, A designating a model amplitude parameter of the measuring signal, f designating a model frequency parameter of the measuring signal, φ designating a model phase angle parameter of the measuring signal and t designating time; and using both the model of the measuring signal and the sampled values, via a optimal mean square estimation method, to determine the model frequency parameter of the measuring signal by the estimation together

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with the model amplitude parameter and the model phase angle parameter (see col. 2, lines 27-39 and col. 3, line 24 to col. 4, line 39).

Premarlani does not disclose a recursive nonlinear least-squares estimation method.

Kumar teaches a recursive nonlinear least-squares estimation method (see Abstract, lines 1-24 and col. 11, lines 40-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Premarlani's method to include a recursive nonlinear least-squares estimation method, as taught by Kumar, in order to minimize the computational requirements (see col. 11, lines 46-47).

As to claim 10, Premarlani also discloses outputting result only when an estimation error being less than a smallest permitted estimation error (see col. 9, line 14 to col. 10, line 5).

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Premarlani in view of Kumar as applied to claim 6 above, and further in view of U. S. Patent No. 4,645,881 to LeToumelin et al.

As noted above, Premarlani in combination with Kumar teach all the features of the claimed invention, but do not disclose a model for the measuring signal in accordance with the relationship $y = A \cdot \sin(2\pi ft + \varphi) + d$, modeling a DC component of the measuring signal.

LeToumelin et al. teach a model for the measuring signal in accordance with the relationship $y = A \cdot \sin(2\pi ft + \varphi) + d$, modeling a DC component of the measuring signal (see col. 4, line 30 to col. 5, line 37).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Premierlani in combination with Kumar's method to include a model for the measuring signal in accordance with the relationship $y = A \cdot \sin(2\pi ft + \phi) + d$. d modeling a DC component of the measuring signal, as taught by LeToumelin et al., in order that a transition of the direct current component of an alternating signal can be detected (see col. 1, lines 16-18).

Allowable Subject Matter

5. Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments filed 11/24/2003 have been fully considered but they are not persuasive.

Applicants argue that Premierlani discloses a method whereby either the amplitude or the phase angle of an input signal can be determined by an optimal mean square estimation analysis, that Premierlani reference does not teach or suggest a method for simultaneously determining the frequency, the amplitude and the phase angle of a measuring signal. The Examiner disagrees with Applicants. As set forth above, Premierlani does disclose simultaneously determining the frequency, the amplitude and the phase angle of a measuring signal (see col. 2, lines 27-39, A signal processor is provided for receiving the data signals and for performing an approximation

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to the optimal mean square estimation analysis on these values to provide the frequency locked sampling signal. The mean square estimation analysis, assumes an amplitude, phase angle and frequency for the input signal and uses these values to predict the values of the input signal at the sampling instants and col. 3, line 24 to col. 4, line 39, The optimal mean square estimation analysis performed by microprocessor 202 assumes an **amplitude A**, a **frequency f** and a **phase angle θ** for the input signal. These assumed values can then be used to predict the values of the input signal at the sampling instants).

Applicants argue that the Kumar reference does not teach or suggest the use of a recursive nonlinear least-squares estimation method to determine the frequency, amplitude and phase angle. The Examiner disagrees with Applicants. As set forth above, Kumar does disclose a recursive nonlinear least-squares estimation method to determine the frequency, amplitude and phase angle (see Abstract, lines 1-24 and col. 11, lines 40-47; using the pair of quadrature sample signals to compute estimates of the amplitude, frequency, and phase of an error signal comprising the difference between the signal of interest and the reference signal employing a least squares estimation; adjusting the amplitude, frequency, and phase of the reference signal from the numerically controlled oscillator in a manner which drives the error signal towards zero).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol S. Tsai whose telephone number is (703) 305-0851. The examiner can normally be reached on Monday-Friday from 7:30 AM to 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703) 308-1677. The fax number for TC 2800 is (703) 308-7382. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2800 receptionist whose telephone number is (703) 308-1782.

In order to reduce pendency and avoid potential delays, Group 2800 is encouraging FAXing of responses to Office actions directly into the Group at (703) 308-7382. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the

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examiner and art unit at the top of your cover sheet. Papers submitted via FAX into Group 2800 will be promptly forwarded to the examiner.

Carol S. W. Tsai

01/23/04


MARC S. HONE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800